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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/727,147	11/29/2000	Matti Halme	BER-015	2942
26717	7590	08/24/2005	EXAMINER	
RONALD CRAIG FISH, A LAW CORPORATION			SEFCHECK, GREGORY B	
PO BOX 820			ART UNIT	PAPER NUMBER
LOS GATOS, CA 95032			2662	

DATE MAILED: 08/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding..

Office Action Summary

Application No.

09/727,147

Applicant(s)

HALME, MATTI

Examiner

Gregory B. Sefcheck

Art Unit

2662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21 and 22 is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

PROSECUTION REOPENED

1. In view of the Appeal Brief filed on 5/23/2005, PROSECUTION IS HEREBY REOPENED. A new ground of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

- (1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,
- (2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2662

3. Claims 1-7, 11, 12, and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jorgensen (US006680922B1) in view of Chiu et al. (US006526022B1), hereafter Chiu.

- In regards to Claims 1-7, 11, 12, and 14-19,

Jorgensen discloses recognition and operation of virtual private networks (Title).

Jorgensen discloses a network and software (system inherently utilizes software to execute processes within the network), that uses the IPSec protocol in tunnel mode for communicating between nodes in a VPN, such communication of packets between Host Workstation 136a and a subscriber 306d (Figs. 4, 17; Col. 45, lines 11-18; Col. 46, lines 6-32; claim 19 – sw for a network node communicating with a second node; claim 11, 14, 15, 18 – network node for communicating with a second node node; claim 1, 2, 11, 14, 15, 18, 19 – employing IPSec protocol for tunneling IP packets between the source and destination).

Jorgensen does not disclose monitoring of the links over which IPSec transmission between a source and destination in

Chiu discloses congestion and flow control detection (monitoring) of communication links in a network (Title; Abstract; Fig. 1; claim 1, 2, 8 – method for monitoring an active communication link between a source node and a destination node).

Chiu shows that a Repair Head 110-4 transmits ACK messages along a monitored communication path to a sender station 102 as numbered messages are

successfully received (Col. 5, lines 57-65). Similarly, destination stations 110-1 through 110-3 transmit ACK messages along their communication paths to the Repair Head 110-4 as messages are successfully received (Col. 6, lines 8-15). ACK messages are sent to acknowledge a predetermined window of packets at a time (Col. 16, lines 62-67; claim 1,2,11,14,15,18,19 – transmitting an ack packet by the destination if at least one of a first and second condition is fulfilled; claim 1,2,14,15,18,19 – first condition being the reception of at least a predetermined number of IPSec packets after transmission of the previous ack; second condition being reception of an IPSec packet after a predetermined time has passed after transmission of the previous ack packet).

Chiu further shows that ACK messages contains a sequence number and a bit map length (Col. 17, lines 21-42; claim 2,11,15,18,19 – ack packet comprises at least the sequence number of the last received IPSec packet and at least one value corresponding to the amount of data received via the link; claim 3,5,16 – ack packet comprises a packet counter value indicating the number of packets received via the link; claim 4,5,17 – ack packet comprises a byte counter value indicating the number of bytes received via the link).

Chiu discloses that the transmission rate of packets by the source station and by the repair head is dynamically adjusted. This is done by keeping the rate as high as possible so as to fully use the bandwidth of the network with consideration to the ACK and NACK messages received for each transmission, ensuring that packets are not lost due to congestion (maintaining highest possible throughput with an acceptable success rate of packet transmission; Col. 8, lines 28-44; claim 6,11,18,19 – determining the

packet success rate of the link partly on the basis of information contained in an ack packet; claim 7,12 – determining the throughput of the link partly on the basis of the information contained in an ack packet).

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the network and software of Jorgensen using the method of monitoring a link through the transmission and reception of ACK packets, as disclosed by Chiu. This modification would provide verifiable transmission and information on the communication links along with efficient error recovery of lost data over a network while maintaining the benefits of a secure transmission using the IPSec protocol shown in Jorgensen.

4. Claims 8, 13, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jorgensen in view of Chiu as applied to claims 1-7, 11, 12, and 14-19 above, and further in view of Alvisi et al. (US 20050027859A1), hereafter Alvisi.

- In regards to Claims 8, 13, and 20,

The combination of Jorgensen and Chiu disclose monitoring a communication link between a source and destination that covers the limitations of claim 8 and 13 common to limitations of claims 1-7, 11, 12, and 14-19 shown above.

Though Jorgensen shows round trip delay determination using a “ping” or echo packet (Col. 42, lines 17-20) and Chiu shows that transmitted packet information, including sequence number, is maintained in a cache until a corresponding ACK packet

is received (Col. 3, lines 51-54), neither Jorgensen nor Chiu explicitly disclose determining the round trip time of the communication link on the basis of the reception time of an acknowledgement packet and the stored transmission time of the corresponding transmitted packet.

Alvisi discloses a method for maintaining connections using TCP. Alvisi shows that calculation of round trip time for TCP connections is performed on the basis of the receipt time of an acknowledgement packet and the transmission time of the corresponding transmitted packet (Pg. 5, paragraph 68-69; claims 8,13,20 - determining the round trip time of the communication link on the basis of the reception time of an acknowledgement packet and the stored transmission time of the corresponding transmitted packet).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jorgensen by enabling a determination of a communication link's round trip time on the basis of the reception time of an acknowledgement packet and transmission time of the corresponding transmitted packet, as shown by Alvisi. This provides a way of determining the round trip time of the link within the established transmission-acknowledgement method, thereby enabling an estimate of when an acknowledgement packet for a corresponding transmitted packet is expected. If an acknowledgement packet is not received within a predetermined time of this estimate, it can then be determined that the transmitted packet did not reach its destination and retransmission/recovery can proceed.

5. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jorgensen in view of Chiu and Alvisi as applied to claim 8 above, and further in view of Tam (US006622172B1) and Garcia-Luna-Aceves et al. (US 20010013856A1), hereafter Garcia.

- In regards to Claims 9 and 10,

The combination of Jorgensen, Chiu, and Alvisi disclose monitoring a communication link between a source and destination that covers the limitations of claim 9 common to claim 8 shown above.

Neither Jorgensen, Chiu, nor Alvisi discloses the monitoring of an inactive link between the source and destination as stated in claim 9.

Tam discloses a packet transmission system utilizing TCP/IP that uses a probe packet to measure the roundtrip time of a communication link that is inactive (Fig. 2; Col. 11, lines 45-60). Tam shows that a Round Trip Time Estimation module 12 uses a probe packet (PROBE) transmission and return paths 22,24 shown in isolation from the DAT arrival path 26 and the ACK transmission path 28. The paths share the same input/output resources in the TCP protocol 10 (claim 9 – monitoring an inactive link between the source and destination; claim 9 – transmitting a probe packet from the source to the destination via the inactive link; claim 9 – storing the transmission time of the probe packet in memory; claim 9 – transmitting a response packet to the received probe packet from the destination to the source; claim 9 – determining a round trip time of the inactive link from the difference of the reception time of the response packet and

the stored transmission time of the corresponding probe packet; claim 10 – determining the packet success rate of an inactive link from the number of received response packets to a plurality of transmitted probe packets).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the network and method of Jorgensen by monitoring inactive links by transmitting and receiving probe packets to determine connectivity and round trip delay time of the link, as shown by Tam. The use of a probe packet for determining connectivity and round trip time of an inactive link interconnects elements of the network by the flow of data and information, thereby connecting the network in terms of functionality rather than merely through hardware (Tam, Col. 11, lines 45-48) and thus enabling efficient operation of the system.

Tam does not disclose maintaining the status of active and inactive links or replacing active links with inactive links based on the results of the monitoring.

Garcia discloses a unified routing scheme for ad-hoc internetworking. Garcia shows that routing metrics such as link delay are determined using routing update messages and acknowledgements (Figs. 6-8) and used in routing algorithms to choose active paths of minimum delay (Pg. 10, paragraph 14; claim 9 – maintaining present status of the active and inactive link or replacing active link with inactive link based on the results of the monitoring).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the network and method of Jorgensen by monitoring inactive links by

transmitting and receiving a probe packet to determine round trip time of the link, as shown by Tam, and replacing active links with inactive links based on the monitoring, as shown by Garcia. Utilizing the results of the monitored data and information that connects the network in order to select the links to be used in transmission (i.e. maintain active links or replace active links with inactive links) as shown by Garcia provides increased total throughput of the system and maximizes the use of the network bandwidth.

Allowable Subject Matter

6. Claims 21 and 22 are allowed.

Response to Arguments

7 Applicant's arguments filed 5/23/2005 have been fully considered but they are not persuasive.

- On pg. 11-17, 23, and 25-28 of the Appeal Brief, the Applicant contends that the TCP/IP acknowledgement packet shown in Chiu makes no sense since TCP/IP ACK packets contain sequence numbers in the header of the packet, which would be encrypted within an IPSec packet.
- The Examiner respectfully disagrees. As noted in the interview conducted 4/19/2005, the Examiner has relied on applying the *concept* (emphasis added) of an acknowledgement packet to the IPSec protocol shown by

Jorgensen. Contrary to the Applicant's contention, the Examiner is not attempting to apply the TCP/IP-specific version of acknowledgement packets to the IPSec protocol. The use of a sequence number contained in an acknowledgement packet is shown by Chiu as applied specifically to TCP/IP. However, such an acknowledgement scheme would be beneficial to any other communication protocol. It is the opinion of the Examiner that it would have been obvious to one of ordinary skill in the art at the time of the invention to apply such an acknowledgement packet method, in which the ACK packet contains a sequence number, to other protocols, including IPSec, to provide verifiable transmission as well as other information about the communication link made available through the use of the acknowledgement packet scheme shown by Chiu.

- On pgs. 17 and 20 of the Appeal Brief, the Applicant contends that Chiu does not teach sending an acknowledgement packet if either of the two conditions recited in claim 1 are true, i.e. if a predetermined number of packets have been received or if a packet has been received after a predetermined time has elapsed from transmission of the last ACK packet.
- The Examiner respectfully disagrees. As shown in the rejection above, Chiu shows that an acknowledgement packet is sent to acknowledge a predetermined window of packets at a time (Col. 16, lines 62-67). The Examiner has interpreted this disclosure of Chiu as sending an

acknowledgement packet after a predetermined number of packets have been received, thus meeting the first condition recited in claim 1.

- On pg. 17-18 of the Appeal Brief, the Applicant contends that Chiu is directed to a different problem than the claimed invention and does not recognize the problem sought to be solved by the applicants. Applicant further contends that, at the time of the invention, no apparent reason exists to apply the teaching at hand, for monitoring the performance of an IPSec tunnel.
- The Examiner respectfully disagrees. Both Jorgensen and Chiu, as does the Applicant's claimed invention, generally pertains to the monitoring of communication along a link. While the ACK packet scheme disclosed by Chiu focuses on aspects of communication different from those focused on by the Applicant, the scheme proposed by Chiu nonetheless demonstrates the ability to address the problem of focus in the Applicant's claimed invention. MPEP 2112 [R-2] states that "something which is old does not become patentable upon the discovery of a new property." The discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer. *Atlas Powder Co. v. Ireco Inc.*, 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). Thus, the claiming of a new use, new function or

unknown property which is inherently present in the prior art does not necessarily make the claim patentable. *In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977). It is the opinion of the Examiner that the ability to monitor characteristics of a communication link is shown in the ACK packet scheme in Chiu, though the disclosure of Chiu focuses primarily on separate utility of the ACK packet scheme.

- On pg. 21 and 24 of the Appeal Brief, the Applicant contends that the bit map included in the ACK packet of Chiu is not for indicative of how much data was received. Rather, Applicant's contend that this bit map is included to calculate how much data needs to be resent.
 - It is the opinion of the Examiner that, by representing the amount of data that has not been received, the bit map disclosed by Chiu meets the limitation of a "value corresponding to the amount of data received" as claimed by the Applicant. By indicating the amount of data that has not been received, the bit map value also indicates the amount of data that has been received, since the total amount of data transmitted is known.
2. Applicant's arguments with respect to claims 8, 9, 13, and 20 regarding the determination of round trip times based on the reception times of ACK packets and the transmission times of the corresponding transmitted packets have been considered but are moot in view of the new ground(s) of rejection.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory B. Sefcheck whose telephone number is 571-272-3098. The examiner can normally be reached on Monday-Friday, 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 571-272-3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GBS
8-17-2005


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